PLEASE FOLLOW INSTRUCTIONS ON PAGE FIVE

1. State Building Code to be Amended:

International Building Code	X	State Energy Code
International Residential Code		International Mechanical Code
ICC ANSI A117.1 Accessibility Code		International Fuel Gas Code
International Fire Code		NFPA 54 National Fuel Gas Code
Uniform Plumbing Code		NFPA 58 Liquefied Petroleum Gas Code

Section: 2012 WSEC C402.3.1.3 **Page:** TBD

2. Applicant Name (Specific local government, organization or individual):

Eric Vander Mey, P.E., LEED AP, Rushing Company
Hamilton Hazlehurst, Vulcan, Inc.

3. Signed:

	Principal	March 1, 2013
	Director, Real Estate Development	March 1, 2013
(Sharon Coleman on behalf of Hamilton Hazlehurst)		
Proponents	Titles	Date

4. Designated Contact Person:

Eric Vander Me	y, P.E., LEED AP		Principal		
Name			Title		_
Address: 1725	5 Westlake Ave N, Su	ite 300			
Seat	tle, WA 98109				
Office Phone:	206-285-7114	Cell:	206-321-1677	Fax:	206-285-7111
e-mail address:	ericy@rushingco.	.com			

5. Proposed Code Amendment. Use 'legislative format' including both old and new language. **See** instructions on page five for specific details. Please use a separate sheet for each separate proposal.

Code: 2012 WSEC Section: C402.3.1.3 Page: TBD

Amend section to read as follows:

Make the following changes to C402.3 by adding section C402.3.1.3:

C402.3 Fenestration (Prescriptive). Fenestration shall comply with Table C402.3. Automatic daylighting controls specified by this section shall comply with Section C405.2.2.3.2.

C402.3.1 Maximum area. The vertical fenestration area (not including opaque doors and opaque spandrel panels) shall not exceed 30 percent of the gross above-grade wall area. The skylight area shall not exceed 3 percent of the gross roof area.

C402.3.1.1 Increased vertical fenestration area with daylighting controls. In Climate Zones 1 through 6, a maximum of 40 percent of the gross above-grade wall area shall be permitted to be vertical fenestration, provided:

- 1. No less than 50 percent of the *conditioned floor area* is within a daylight zone;
- 2. Automatic daylighting controls are installed in daylight zones; and
- 3. Visible transmittance (VT) of vertical fenestration is greater than or equal to 1.1 times solar heat gain coefficient (SHGC).

Exception: Fenestration that is outside the scope of NFRC 200 is not required to comply with Item 3.

C402.3.1.2 Increased skylight area with daylighting controls. The skylight area shall be permitted to be a maximum of 5 percent of the roof area provided automatic daylighting controls are installed in daylight zones under skylights.

<u>C402.3.1.3</u> <u>Increased vertical fenestration area for Climate Zones 5 and Marine 4.</u> The vertical fenestration area (not including opaque doors and opaque spandrel panels) shall be permitted to not exceed 40 percent of the gross above-grade wall area, provided:

- 1. The vertical fenestration area shall not exceed 40 percent of the gross above-grade wall area:
- 2. The vertical fenestration area from 30 to 40 percent of the gross above-grade wall area u-valve is as follows:
 - a. Non-metal framing (all) U-factor = 0.22
 - b. Metal framing (fixed) U-factor = 0.22
 - c. Metal framing (operable) U-factor = 0.22
 - d. Metal framing (entrance doors) U-factor = 0.35
- 3. The vertical fenestration area from 30 to 40 percent of the gross above-grade wall area SHGC = 0.32.
- 4. Visible transmittance (VT) of vertical fenestration is greater than or equal to 1.50 times solar heat gain coefficient (SHGC).

This compliance path may be used for Prescriptive U-factor Alternate C402.1.2 or Component Performance Building Envelope Option C402.1.3 envelope compliance path.

Table provided for reference. No changes proposed.

TABLE C402.3 BUILDING ENVELOPE REQUIREMENTS: FENESTRATION

CLIMATE ZONE	1	2	3	4 EXCEPT MARINE	5 AND MARINE 4	6	7	8			
Vertical fenestration											
U-factor											
Nonmetal framing (all) ^a					0.32 <u>0.30</u>	0.32 0.30					
Metal framing (fixed) ^b	0.50	0.50	0.46	0.38	0.38	0.36	0.29	0.29			
Metal framing (operable) ^c	0.65	0.65	0.60	0.45	0.45 0.40	0.43 0.40	0.37	0.37			
Metal framing (entrance doors) ^d	1.10	0.83	0.77	0.77	0.77 <u>0.60</u>	0.77 <u>0.60</u>	0.77	0.77			
SHGC											
SHGC	0.25	0.25	0.25	0.40	0.40	0.40	0.45	0.45			
Skylights											
U-factor	0.75	0.65	0.55	0.50	0.50	0.50	0.50	0.50			
SHGC	0.35	0.35	0.35	0.40	0.40 <u>0.35</u>	0.40 <u>0.35</u>	NR	NR			

No

Please note number of additional pages:

Supporting Data for Statewide Amendment Proposals. This information is required for all statewide amendment proposals. Attach supporting documentation, as necessary; incomplete proposals will not be accepted.

The SBCC requires supporting data on any amendment proposal to show:

- 1. That it meets basic criteria See Part I to specify how this proposal meets the criteria for code amendment.
- 2. The intended effect—See Part II to describe the purpose of the proposed amendment, including the benefits and the problems addressed.
- 3. The potential impacts or benefits to business—See Part III/Types of Construction, to explain how methods in construction businesses, industries and services would be affected.
- 4. The potential impact on enforcement procedures, See Part III/Types of Services Required, to provide some analysis of the impacts on code enforcement in local jurisdictions.
- 5. Economic costs and benefits Use the Table in Part IV of this form to estimate the costs and benefits of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance.

Part I ❖ Background information on amendment.

Code References:	C402.3.1.3	Title: 1	Maximum Vertical Fenestration Are	ea	
Related codes:		(Does th	is amendment change other related	codes?)	
Proponent:	Eric Vander Mey	Phone:	206-285-7114	Date:	3/1/2013

NOTE: State-wide and emergency state-wide amendments to the state building code must be based on one of the following criteria; please indicate the pertinent rationale for the proposed amendment by selecting from the list below:

- (1) The amendment is needed to address a critical life/safety need.
- (2) The amendment is needed to address a specific state policy or statute.
- (3) The amendment is needed for consistency with state or federal regulations.
- (4) The amendment is needed to address a unique character of the state.
- (5) The amendment corrects errors and omissions.

Part II * Amendment Benefit:

PROBLEM(S) ADDRESSED (Describe the intended effect of the proposed code amendment):

Rushing and Vulcan have analyzed the daylighting exception that allows 40% Window to Wall (WWR) ratio of glazing percentage. As the change to 30% WWR was a 2012 IECC it received little attention in the public review phase. It was thought that the 40% WWR daylighting optional compliance path was a viable path to achieving 40% WWR. Upon further analysis this is not the case and would drastically change the floorplan layout of a typical office or multi-family residential project. This would drastically reduce the allowable floor area and increase the SF of exterior wall area driving up the cost per SF of the project.

This code proposal provides an alternate compliance path for projects that have floor layouts, sections of opaque walls that cannot be glazed due to shared property lines or other site constraints, or that are mulit-family residential and do not see the benefit of daylighting controls.

PRIMARY REASON FOR AMENDMENT: (Describe how the amendment meets one of the criteria listed above)

Reduction of 25% of the WWR ratio (from 40% WWR to 30% WWR) in one code cycle is too great a jump. In order to provide a quality interior environment for office and high-rise residential buildings a minimum of 40% WWR glazing is required. Current studies by Vulcan, Inc shows that the typical glazing percentage is currently around 42% WWR. A similar percentage of glazing is needed for upcoming projects to be viable.

The cost of going to triple pane glazing or the best possible double pane glazing to achieve a typical market required glazing percentage of 40% WWR is not viable in the current economic market. If the 2012 WSEC is not amended this could stall many projects that cannot afford the additional cost of dramatically improved glazing systems to achieve a reasonable

vertical wall glazing percentage. The cost increase above what is required if the daylighting exception cannot be utilized to achieve a 40% WWR is approximately an additional 14% to 18%. See attached cost data matrix for details.

This proposal would allow a minor decrease in the overall UA of the vertical wall by approximately 10.6%. It would allow a minor decrease in the overall SHGC of the glazing by approximately 6.7%. It would require a VT to SHGC ratio to increase the potential for daylighting in the space.

If all buildings need to use the Total Building Performance Path (C407) to achieve a standard glazing percentage this will lead to undue code enforcement cost. Many jurisdictions are not setup to review and enforce the TBP compliance path. Per RCW 19.27A there needs to be multiple viable ways to show code compliance.

As mentioned above this proposal requires a high VT to SHGC ratio that is not required for other code options. Most glazing utilized today for these projects has a visible light transmittance of 50% or greater. With an SHGC of 0.32 in the code baseline this translates to a viable ratio of 1.50 or better. This will help to provide additional energy savings through daylighting of the conditioned space.

Many land use zones require high glazing percentages or transparency requirements for retail and other street level amenities. This forces glazing down to the ground level and takes away glazing from the other floors of the building. Until land use codes can catch up to the trend of the energy code to reduce energy consumption by reducing glazing this will be a constant conflict.

See the following data that was provided as backup:

- Cost data of glazing systems
- Recap of changes to 2012 IECC, 2012 WSEC, and alternate proposals currently being considered for 2012 SEC

TYPE OF BENEFITS PROJECTED:

Similar energy savings to 2012 WSEC as recommended by the SBCC.

Lower enforcement costs with prescriptive ways to comply with the code and achieve a 40% WWR building.

Part III Amendment Impacts or Benefits:	
TYPES OF CONSTRUCTION: ✓ New Construction	r r
☐ Residential-Single Family ☐ Residential-Multi	i Family ☑ Commercial ☐ Industrial
List businesses/industries affected by amend	ment:
ř	
Manufacturers:	Glazing manufacturers
Specific Construction Contractors & Trades:	Glazing contractors, opaque wall contractors
Construction Supply Industry:	N/A
Specialty Trades:	N/A
Types of Buildings:	Multi-Family Residential, Commercial Office, Commercial other
Fire Protection Industry:	N/A
TYPES OF SERVICES REQUIRED:	
-	
☑ Reporting. Brief Description:	
No impact.	
✓ Record Keeping. Brief Description:	
No impact.	
No impact.	
☐ Other. Brief Description:	
No Impact	
1 to impact	
☑ Indirect Cost to Industry. Indicate whether there	e are multiple sources to obtain the equipment, material or service required by this
proposal.	
☐ Small Business Impact If not provide a justifica	ation of the benefit versus small business impact

Part IV ❖ Amendment Costs and Benefits

	Construction ¹			Enforcement ²			Operations & Maintenance ³		
Building Type	Costs	% impact ⁴	Benefits ⁵	Costs	% impact	Benefits	Costs	% impact	Benefits
Residential									
Single family	NA	NA	NA	NA	NA	NA	NA	NA	NA
Multi-family	Lower	Minimal	Great	Lower	Minimal	Great	None	None	None
Commercial/Retail	Lower	Minimal	Great	Lower	Minimal	Great	None	None	None
Industrial	None	None	None	None	None	None	None	None	None
Institutional	None	None	None	Lower	Minimal	None	None	None	None

See attached cost data in proposal backup information.

¹ \$ / square foot of floor area or other cost. Attach data. **Construction** costs are costs prior to occupancy, and include both design and direct construction costs that impact the total cost of the construction to the owner/consumer.

² Cost per project plan. Attach data. **Enforcement** costs include governmental review of plans, field inspection, and mediated litigation required for enforcement.

³ Cost to building owner/tenants over the life of the project.

⁴ Cost differential over a specific size project or range of projects as determined by the proponent. Provide sufficient cost and benefit detail to clarify the impact to the Council. All data should be created and referenced to third party reputable sources for verification.

⁵ Note sectors with measurable benefit from Part II, including benefits to a) the user, b) the public, c) the industry, and/or d) the economy; use e) for all of the above.